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BULLETIN

OF THE

TORREY BOTANICAL CLUB

OCTOBER, 1910

Notes on Rosaceae — IV

PER AXEL RYDBERG

POTENTILLA (*continued*)*

PERMOLLES

This group contains only one species, *Potentilla permollis* Rydb. Dr. Wolf reduced this to a variety of *P. Blaschkeana*, evidently without having seen any specimen. It has a pubescence wholly unlike any species in the GRACILES or the NUTTALLIANAE groups, and although somewhat related to these, I regard it as distinct enough to be placed in a group by itself. Piper, who is rather conservative in his treatment, regards it as distinct in his Flora of Washington,† and cites three specimens.

CANDIDAE

This group contains six species, of which four are proposed as new. These are *Potentilla Elmeri*, *P. Pecten*, *P. subvillosa*, and *P. comosa*. Of these, the last one is related to *P. Bakeri*, and the rest to *P. candida*. *Potentilla Pecten* stands nearest to that species and differs mainly in the leaves, which are green above, and in the stem, which bears only a few small leaves. The following specimens belong to *P. Pecten:*

MONTANA: Bridger Mountains, 1897, *Rydberg & Bessey 4377*.

WYOMING: Cokerville, 1898, *Aven Nelson 4647;* Union Pass, *Aven Nelson 943*.

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*See Bull. Torrey Club **37**: 375–386.

†Contr. U. S. Nat. Herb. vol. 11.

[The BULLETIN for September, 1910 (**37** : 443–486) was issued 5 O 1910.]

UTAH: Big Cottonwood Cañon, 1905, *Garrett 1614*.

Potentilla Elmeri resembles *P. Pecten* in habit but is silky, not at all tomentose. It is represented by the following:

CALIFORNIA: Griffins, Ventura County, 1902, *Elmer 4009;* Donner Lake, 1903, *Heller*.

Potentilla subvillosa and *P. comosa* are very local and are represented by the type collections only.

Dr. Wolf in his monograph and Professor Aven Nelson in the New Manual of Botany of the Central Rocky Mountains unite *Potentilla Bakeri* and *P. viridescens*, and the former reduces both to a variety of *P. gracilis*. *P. viridescens* is evidently related to *P. gracilis* and differs in the characters presented by Dr. Wolf; but *P. Bakeri* has the leaves dissected to near the midrib into linear or linear-oblong and obtuse, not lanceolate and acute divisions. *P. Bakeri* has spreading pubescence on the stem, and the leaves are rather densely tomentose beneath. I have collected *Potentilla Bakeri* myself in Utah and *P. viridescens* in Montana and know that they both hold their characters well. Besides the specimens cited by me in the original publication, the following represent *P. Bakeri*:

UTAH: Wahsatch County, near Midway, 1905, *Carlton & Garrett 6721* and *6696;* Juab, June 10, 1902, *Goodding 1092;* Big Cottonwood Cañon, Aug. 14, 1905, *Garrett 1614;* Hot Pots, Wahsatch County, *Garrett F726*.

WYOMING: Chug Creek, Albany Co., June 29, 1900, *Aven Nelson 7318* (not *7317*, which is cited by Dr. Wolf under *P. gracilis viridescens*).

PECTINISECTAE

This group contains four species, of which *Potentilla longiloba* is described as new. It resembles *P. Blaschkeana* in habit, but the leaves are loosely villous-tomentose above. The following specimens belong here:

MONTANA: Lo Lo, May 29, 1897, *Elrod and assistants 110;* Gallatin Valley, near Bozeman, 1896, *Flodman 563*, in part.

WASHINGTON: Pullman, June, 1903, *Piper 4134*.

BRITISH COLUMBIA: Near international boundary between Kettle and Columbia rivers, June 25, 1902, *Macoun 63901*.

IDAHO: Clear Water, *Spaulding*.

Dr. Wolf regards *Potentilla ctenophora* as a variety of *P. flabelliformis*, which was also my first idea, before I knew the plant better. Dr. Wolf makes some remarks which read in translation as follows: "The relationship of this variety to var. *typica* seems to me about the same as, for instance, that of *P. argentea* var. *decumbens* to its var. *typica*, and its elevation to specific rank seems to have been made on slight grounds, as the author himself in his monograph says that it should perhaps be regarded as a variety of *P. flabelliformis*, as intermediate forms are not lacking. Why has he not let it remain in its original category? It seems that he makes the limitations of his idea of a species narrower as the years pass by." This may be in a certain sense true, but it has been brought about by a study of many years and the characters stand out better and better as the plants become better known. In this special case Dr. Wolf's remarks were more or less amiss. I do not know what specimens he might have had at hand to support his statements. Neither in the original descriptions of *P. flabelliformis ctenophora* in the Bulletin of the Torrey Botanical Club nor in my monograph, did I cite any specimens. Unfortunately, I forgot to do so. The illustration in the monograph gives only a basal leaf. There is nothing to show the differences in general habit and the flowers. Professor Piper has directed my attention to the fact that my *P. ctenophora* is the same as *P. Blaschkeana* Lehm. Later he has also recorded his views on this point in his Flora of Washington. I agree fully with Professor Piper and have stated before that my conception of *P. Blaschkeana* was a composite one, mainly made up of *P. grosse-serrata*. Dr. Wolf, I think, did not make the same mistake, for his description points unmistakably to *P. Blaschkeana* Turcz., as described and illustrated by Lehmann, not as characterized in my monograph. After the citation of Lehmann's plate, Dr. Wolf gives in parenthesis "(*optima*)". His conception of *P. Blaschkeana* was therefore evidently correct. As my *P. ctenophora* is evidently the same, why should it not be regarded as specifically distinct from *P. flabelliformis*?

Professor Aven Nelson in the New Manual of Botany of the Central Rocky Mountains makes *P. Blaschkeana* a synonym of *P. gracilis* and *P. ctenophora* a synonym of *P. flabelliformis*.

GRACILES

The following species were described as new in the North American Flora: *Potentilla intermittens*, *P. alaskana*, *P. dichroa*, and *P. camporum*.

As stated in the North American Flora, *Potentilla intermittens* may be a hybrid between *P. glaucophylla* and *P. filipes*, so intermediate is it in every respect that a mere glance would suggest its hybrid origin. As I had no direct evidence, however, I proposed a specific name and described it, hoping that botanists might study it further in the field. The following specimens belong here:

COLORADO: Cameron Pass, 1896, *Baker 25;* Buffalo Pass, 1898, *Shear 3863*.

ALBERTA: Foothills, 1897, *Macoun 16722*.

Potentilla alaskana resembles *P. viridescens* in habit but the flowers are much larger, the petals being 9–14 mm. long, the bractlets linear instead of lanceolate, and the leaves densely tomentose beneath. It differs from *P. gracilis* in the lower stem and the appressed pubescence on stems and petioles. Several specimens have been seen, but all were from the Island of Kadiak, Alaska.

Potentilla dichroa is related to *P. glomerata* but differs in the dense white tomentum of the lower surface of the leaves. It differs from *P. gracilis* in the thicker leaves, and in the stouter and lower, more leafy stem, which is appressed-hairy. The following specimens belong here:

MONTANA: Old Sentinel, 1901, *MacDougal 185*.

OREGON: Burns, 1901, *Griffiths & Morris 766*.

The following I have referred here, although they are less typical specimens:

UTAH: Hot Pots, Wahsatch County, 1905, *Garrett F727*.

NEVADA: Washoe Valley, *Stretch 74*.

Potentilla camporum is somewhat intermediate between *P. gracilis* and *P. filipes*, having the toothing of the leaves of the former and the small flowers of the latter. It has much broader, thicker, and more pubescent leaves than the former, more coarsely toothed and more hairy leaves than the latter. The following specimens are referred here:

SOUTH DAKOTA: Black Hills, *Miss Pratt 93*

MANITOBA: Rapid City, 1896, *Macoun 14447* and *14450;* Fort Ellis, 1906, *Macoun & Herriot 68930.*

SASKATCHEWAN: Milk River, 1881, *Dawson 34348;* The Holes, 1885, *Macoun 10447;* Cypress Hills, 1894, *Macoun 4538;* Herzel, 1906, *Macoun & Herriot 69827;* Park Bay, 1896, *Macoun 14447;* Silver City, 1885, *Macoun 635* and *7284.*

BRITISH COLUMBIA: Slotch-oot-a Lake, 1876, *Dawson 7282;* Nicola Valley, *Macoun 7229;* Revelstoke, 1890, *Macoun 7287.*

In 1901, while visiting northern Europe, I found in the Botanical Garden at Upsala specimens of *Potentilla pulcherrima* Lehm., which had been cultivated for several generations since Lehmann's time and kept unchanged the characters of pinnate leaves, etc. Side by side were growing also specimens of the so-called *P. gracilis* from Colorado with its digitate leaves. The latter is of course not the true *P. gracilis* but the *P. pulcherrima* of my monograph or *P. pulcherrima communis* Th. Wolf. Seeing these two forms together, the suggestion came to me that they might not be one species. While collecting in Utah, I found *P. pulcherrima* in the same cañon where Dr. Watson had rediscovered it, viz., in the Big Cottonwood Cañon, southeast of Salt Lake City. Here it was growing alone. Numerous specimens were seen in an open place along the river, but no digitate-leaved specimens were seen. I have come to the conclusion that it is not a parallel case to *P. diversifolia,* in which the basal leaves are either pinnate or digitate or both on the same plant. In all specimens of *P. pulcherrima* proper, the basal leaves are all pinnate, while in *P. pulcherrima communis* they are all digitate. In 1901, I described a supposed new species under the name of *P. filipes,* which Dr. Wolf reduced to a variety of *P. pulcherrima.* I have found that the characters separating *P. filipes* and the so-called *P. pulcherrima* of Colorado do not hold. I therefore united the two into one species under the name of *P. filipes* in the North American Flora. A depauperate high-mountain form of this species is *P. pulcherrima condensata* Th. Wolf.

Professor Nelson in the New Manual of Botany of the Central Rocky Mountains makes not only *P. pulcherrima* and *P. filipes* but also *P. fastigiata* and *P. Blaschkeana* synonyms of *P. gracilis,* a consolidation which goes altogether too far.

LONGIPEDUNCULATAE

This section contains only one species, which Dr. Wolf makes a doubtful variety of *P. gracilis*.

SUBJUGAE

This group also contains only a single species, *Potentilla subjuga*. In my monograph, I included also in this group *P. quinquefolia*, a disposition which Dr. Simmons in the Flora of Ellesmere Land rightly criticizes. This species I transferred in the North American Flora to the CONCINNAE group.

SUBCORIACEAE

This group contains three species, all Mexican. Dr. Wolf calls the group RANUNCULOIDES and includes in it not only these three species, and the BREVIFOLIAE and SUBVISCOSAE groups, but also such diverse plants as *Potentilla Townsendii*, *P. Palmeri*, *P. Ranunculus*, *P. flabellifolia*, *P. fragiformis*, and *P. Sierrae-Blancae*, together with *P. acuminata*, which is a species with pinnate leaves related to *P. saxosa*.

OBOVATIFOLIAE

This group also is Mexican and Central American and consists of three species. The first of these, *P. staminea* Rydb., was until lately known only from the type collection by Ghiesbrecht. It has been collected also in Guatemala, in 1896, *Seler 2753*. If I am not mistaken, they are the same specimens that Dr. Wolf cites under *P. haematochrus* on page 226 of his monograph. A few years after its publication I referred to this species doubtfully *Pringle 6890*. This evidently was the reason why Dr. Wolf reduced *P. staminea* to a variety of *P. leptopetala* Lehm. *Pringle 6890* is evidently much more closely related to *P. leptopetala* than to *P. staminea*. I have been inclined to refer *Pringle 6890* and other material collected later in the same region to *P. leptopetala*, for they agree fairly well with Lehmann's description (except as to the size of the petals). If, however, Lehmann's figure in his Monographia, *pl. 43*, is correct, then the plant from which it was prawn must be of a different species from *Pringle 6890* or else it is a freak or in an abnormal condition. I have seen neither the type of

P. leptopetala, nor the plants collected by Schiede and by Ehrenberg, enumerated in Linnaea. From certain remarks there I have suspected that these specimens belonged rather to the same species as *Pringle 6890* than to the typical *P. leptopetala.* Dr. Wolf, on page 228 of his monograph, also states that these specimens agree very well with *Pringle 6890.* From this I may judge that Dr. Wolf's interpretation of my *P. staminea* is wrong and that his *P. leptopetala staminea* is the same as my *P. obovatifolia*, which was based on *Pringle 6890.* Dr. Wolf has committed another grave blunder, for on page 251 he reduces *P. obovatifolia* to a variety of *P. concinnaeformis.* Here he also cites *Pringle 6890*, overlooking the fact that he had already cited the same number under *P. leptopetala staminea.* When preparing the manuscript for page 228, he evidently had the specimen before him, while when doing the same for page 251, he made use of no specimens and simply made *P. obovatifolia* a variety of *P. concinnaeformis*, because of my statement that it was nearest *P. concinnaeformis* of the CONCINNAE group. From his treatment of *P. concinnaeformis*, it is evident that Dr. Wolf had seen no specimens of that species. All he had to go by was the short description and plate in my monograph. I think it rather audacious to reduce one species to a variety of another, without knowing material of either. The following specimens belong to *P. obovatifolia*:

MEXICO: Sierra de Pachuca, Hidalgo, 1898, *Pringle 6890;* also in 1902, *Pringle 9783;* Cuyamaloya, Hidalgo, 1906, *Pringle 10276.*

HORRIDAE

This group contains two Mexican species, known only from the type collections. *Potentilla horrida* is referred to the HAEMATOCHROAE group by Dr. Wolf, notwithstanding its yellow flowers. *P. durangensis* is described as new in the North American Flora.

RUBRAE

The oldest known species of this group is *Potentilla comarioides* Humb. & Bonp. Unfortunately this universally known name is antedated by one year by *P. rubra* Willd., which name must be adopted. The group contains seven species from northern Mexico and the southwestern United States. Of these, *P.*

madrensis is overlooked by Dr. Wolf. *P. sanguinea* is described as new in the North American Flora.

AUREAE

As treated in the North American Flora, this group contains nine North American species. If one follows Dr. Wolf in laying so much stress on the form of the style, all the American species, except *Potentilla maculata* and *P. Langeana*, should be excluded from the AUREAE group. In this group the styles should be somewhat thickened upward, instead of downward. In some species the styles are perfectly filiform, not thickened either way. The result is that a distinct line can not be drawn between the CONOSTYLAE and the GOMPHOSTYLAE of Dr. Wolf's monograph. In the AUREAE, Dr. Wolf has such diverse species as *Potentilla maculata*, *P. elegans*, *P. Robbinsiana*, and *P. gelida*. Of these, *P. Robbinsiana* at least does not have the styles thickened upwards. The RANUNCULOIDES group of Dr. Wolf is still worse. It contains not only the thick-leaved and thick-rhizomed Mexican and Central American species, of which it was made up in my treatment, and my SUBVISCOSAE and BREVIFOLIAE groups, but also such diverse species as *Potentilla acuminata* Hall (related to *P. saxosa*), *P. flabellifolia* Hook., *P. fragiformis* Willd., *P. Townsendii* Rydb., *P. Palmeri* Th. Wolf, and *P. Sierrae-Blancae* Rydb. *Potentilla emarginata* Pursh is placed with the AUREAE, while the closely related *P. fragiformis* is placed in RANUNCULOIDES. *P. gelida* Mey. is put in the former, and *P. flabelliformis* Hook., which S. Watson and other students of *Potentilla* have not been able to distinguish from it, is put in the latter group; *P. perdissecta* Rydb. or, as Dr. Wolf calls it, *P. diversifolia* var. *decurrens* (Wats.) Th. Wolf, is placed in the MULTIJUGAE, while *P. Ranunculus* Lange, which can be separated from it only by the different rootstock (see below), is placed in the RANUNCULOIDES. *P. Townsendii* and *P. Palmeri* and their relationship I have discussed before. Dr. Wolf's grouping in this case therefore is very artificial and unsatisfactory.

I think that the group as constituted by me is more natural, although it could be subdivided into three subgroups. *Potentilla Sierrae-Blancae* stands alone, is not so closely related to the rest, and shows many affinities to the CONCINNAE, although it lacks tomentum.

Potentilla maculata and *P. Langeana* are closely related. Dr. Wolf adopts the name *P. alpestris* for the former, claiming that the name *P. maculata* Pourr. probably belongs to *P. pyrenaica* Ram. He does not, however, adopt the name *P. maculata* for the latter, although the name is much older. Dr. Wolf does not admit *P. Langeana* as a distinct species.

The rest of my AUREAE group are closely related. *Potentilla Vreelandii* Rydb. was first described in the North American Flora, and was consequently unknown to Dr. Wolf.

Potentilla diversifolia Lehm. is placed in the MULTIJUGAE group by Dr. Wolf, and under it he recognizes four varieties: *genuina*, *decurrens*, *glaucophylla*, and *jucunda*. It is true that *P. diversifolia* often has at least some of the leaves pinnate, although with closely approximate pairs of leaflets, and that it connects the MULTIJUGAE and the AUREAE groups. The forms regarded as varieties of it by Dr. Wolf have digitate leaves.

Concerning *Potentilla glaucophylla* Lehm., first described as a species and afterwards reduced to a variety of *P. diversifolia* by the author himself, it may be said that although it is very close to some forms of *P. diversifolia*, especially when they bear only digitate leaves, it seems to be more different in the living state than in dried material, and Professor Aven Nelson,* who also has had chance to study them in the field agrees with me in regarding them as distinct.

That Dr. Wolf reduced *Potentilla jucunda* to a variety is probably due to the fact that he had received unusually large specimens of *P. glaucophylla* which were labeled *P. jucunda*. See the remarks in my preceding Notes on Rosaceae.

What I actually described and figured in my monograph of *Potentilla* as *Potentilla decurrens*, was not the same as *P. dissecta decurrens* of S. Watson. My description was, however, made broad enough to include Watson's plant. In 1905, while collecting in Utah, I collected at several places a plant which I regarded as a new species. A closer comparison with Watson's type of *P. dissecta decurrens* (which is a rather poor specimen) revealed my mistake. *Potentilla decurrens* of my monograph, and as understood by A. Nelson, *loc. cit.*, or *A. diversifolia* var. *decurrens* Th. Wolf, mainly, is not the same as Watson's plant. It is a plant related to *P. glaucophylla* and *P. Ranunculus*, while the original *P. dissecta decurrens* is related to *P. ovina* J. M. Macoun· In the North American Flora, the former is described under the name *P. perdissecta*.

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*See Coult. & Nels. New Man. Cent. Rocky Mts. 257.

Potentilla Ranunculus Lange, which Dr. Wolf associates with *P. ranunculoides* H. B. K., is not related to that species but to the one just discussed above and to *P. glaucophylla*. It is hard to distinguish it from these species except by the rootstock, which in *P. Ranunculus* is much branched and creeping and densely covered with scales. This character is found in many arctic plants and is perhaps due to the climatic conditions. *P. Ranunculus* has usually broader leaflets than *P. glaucophylla* and they are less dissected than in *P. perdissecta*.

Potentilla multisecta (S. Wats.) Rydb. is closely related to *P. perdissecta*. Dr. Wolf reduces it back to a variety of *P. dissecta*, as it was originally described by S. Watson. This is really a transfer to another species, for *P. dissecta* of Watson was not the same as *P. dissecta* Pursh, but was *P. diversifolia* Lehm. This transfer is made, although Dr. Wolf expressly states that he has not seen *P. dissecta* Pursh. Professor Nelson, *loc. cit.*, has omitted this species, although it has been collected in Wyoming.

SUBVISCOSAE

Very little can be said about this group, as little material has been received since my monograph and few new facts have been brought to light since that time. Through further study of *Potentilla Wheeleri viscidula*, I have come to the conclusion that it deserves specific rank and it is given such in the North American Flora. Dr. Wolf has made no change in the species of this group, as he had seen specimens of only *P. Wheeleri*. As stated before, he includes the whole group in his RANUNCULOIDES.

CONCINNAE

This group has been a little modified from the treatment in my monograph and a few species have been transferred from other groups.

Potentilla fastigiata Nutt. was transferred from the GRACILES group. Although it connects the CONCINNAE with this group and with the CANDIDAE, and has a more erect stem than the other species, I think, after all, that it should be placed here and that it has its nearest relative in *P. concinnaeformis* Rydb. Dr. Wolf retains it in the GRACILES group and associates it with *P. tomentosa*, *P. oaxacana*, and *P. Nuttallii*. Its nearest relative outside the CONCINNAE is *P. candida* Rydb., and a few of the specimens cited by me under the latter in my monograph belong to *P. fastigiata* instead. It is evidently unknown to Professor Nelson, for under *P. gracilis*, he has the following remark: "(This may be a composite species; as here used it includes the following, which are not readily discriminated: *P. fastigiata* Nutt.; *P. pulcherrima* Lehm.; *P. Blaschkeana* Turcz. . . . .)" The leaves of *P. fastigiata* are silky-villous with rather long hairs on both sides, only very slightly tomentose beneath.

A species related to this and *P. concinnaeformis* is described in the North American Flora under the name of *Potentilla Hassei*. It differs from *P. fastigiata* in the broader, broadly obovate leaflets and the oblong instead of linear-lanceolate bractlets, and from *P. concinnaeformis* in the dense many-flowered inflorescence, the densely pubescent stem, and the oblong bractlets. Besides the type given in the North American Flora, I have seen the following specimens, referable to it:

CALIFORNIA: Head of Stanislaus River, 1903, *Hall & Chandler 4778*.

There has been no change made in *Potentilla concinnaeformis*, *P. oblanceolata*, and *P. bicrenata* since my monograph, except that the range of the last one has been extended to Wyoming, where it has been collected by Professor Nelson. Dr. Wolf admits all three as species, although he had not seen specimens of any of them. Concerning the reduction of *P. obovatifolia* Rydb. to a variety of the first one, see my remarks on page 493.

A further study of *P. concinna* and its variety *divisa* brought to light facts that seemed to me sufficient to warrant the raising of the latter to specific rank.

In the North American Flora, I transfer *Potentilla quinquefolia* Rydb. to this group. In my monograph I had placed it with *P.*

subjuga. My placing it with that species was done simply because both show a tendency to combining digitate and pinnate characters in the leaves. Dr. Simmons in the Flora of Ellesmereland, has rightly criticized me for so doing. The species was based upon *Potentilla nivea pentaphylla* Lehm., as represented by some of the specimens cited in Hooker's Flora Boreali-Americana. Unfortunately Dr. Lehmann did not propose the name in the work just mentioned, although he gave a description. His publication of the variety did not appear until 1850.* In the meantime, the name had been taken up by Turczaninow,† but whether for the same plant or not I can not tell. As the name *pentaphylla* was not available I used another name, *P. quinquefolia*, and it matters little what plant Turczaninow had, as *P. quinquefolia* applies to the North American plant characterized in my description. In 1900 Mr. Morten Pedersen Porsild sent me a collection of Potentillas from Greenland. I undertook to determine them and also published a paper upon them in the Bulletin of the Torrey Botanical Club for March, 1901. Some of the work was hastily done and several corrections to that paper must be made. One of the mistakes made was that I regarded *P. nivea subquinata* Lange as identical with *P. quinquefolia.* Following the Madison amendments to the Rochester Code, I substituted the name *P. subquinata* (Lange) Rydb. for *P. quinquefolia. P. nivea*, as well as other 3-foliolate species, has occasionally some of the lower leaves 5-foliolate, but *P. quinquefolia* has them nearly always so. On account of this confusion, I have been severely criticized both by Dr. Simmons and by Dr. Wolf for regarding *P. quinquefolia* Rydb. as a distinct species. The former made the following remarks: "there being not the slightest cause to look upon it as a species as Rydberg has done, probably because he has had no opportunity of studying the plant from nature." If Dr. Simmons had taken a little trouble, he could have found that this statement was not exactly true, for in my monograph, I cited a specimen collected by myself in Montana, viz., *Rydberg & Bessey 4397*, and I had had opportunity to study it in the field. I have since collected it at two other stations, one in Colorado and one in Utah.

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*Delect. Sem. Hort. Hamb. **1850**: 12. 1850.

†Bull. Soc. Nat. Mosc. **14**: 607. 1843.

In neither case did I find a single specimen that could be referred to *P. nivea.* At the Colorado station it was associated with *P. saximontana* and *P. uniflora*, but was easy to distinguish, especially from the latter. In the collections at the New York Botanical Garden there are eighteen sheets of *P. quinquefolia*, representing sixteen localities. I have seen perhaps as many more localities represented in other herbaria, and have seen no sheets on which it was mixed with *P. nivea* proper. We have only four sheets of *P. nivea* from the Rocky Mountain region. When I visited Copenhagen in 1901, I confused *P. rubricaulis* with it and named a specimen of the latter *P. subquinata.* This was due mostly to the fact that I had a wrong idea of *P. rubricaulis* Lehm. and had applied the latter name to what appears in the North American Flora as *P. rubripes* Rydb. Dr. Simmons has cleared up *P. rubricaulis* Lehm. in such a way that nothing more needs to be said, except perhaps that he could have made plainer the differences between the trifoliolate *P. rubricaulis* var. *arctica* and *P. nivea* L., taken in such a broad sense as Dr. Simmons has done. Of the specimens collected by Pedersen and referred to *P. subquinata* by me, *no. 496*, as represented in the New York Botanical Garden herbarium, is a form of *P. nivea* L., with some quinate leaves. It is intermediate between *P. nivea macrophylla* and *P. nivea subquinata. Nos. 113* and *233* belong to *P. nipharga* Rydb., which also sometimes has quinate leaves. The other numbers are not represented here. There is none referable to *P. quinquefolia*, which seems confined to the Rocky Mountains of the United States and Northwestern Canada.

Closely related to *P. quinquefolia*, perhaps a depauperate variety thereof, is *P. modesta* Rydb., described as new in the North American Flora. It is confined to two mountain chains in Utah. It differs from *P. quinquefolia*, besides in the smaller stature, in the linear and obtuse instead of lanceolate and acute bractlets, the golden yellow petals only 4 mm. long, and the dense inflorescence, reminding one of that of *P. Hookeriana.* The following specimens belong to it:

UTAH: Mount Barrette, July 26, 1905, *Rydberg & Carlton 7261, 7259,* and *7258;* Sierra La Sal, 1899, *C. A. Purpus G, Q,* and *R.*

NIVEAE

This group is represented in the North American Flora by nine species. Of these, two are proposed as new, *P. nipharga* and *P. Pedersenii*, the first based on specimens referred to *P. nivea* and several of its varieties, the latter based on *P. subquinata Pedersenii* Rydb.

Dr. Simmons in his Flora of Ellesmere Land remarked: "Rather might it be justifiable to distinguish all the arctic forms with deeply incised leaflets, from the typical *P. nivea*, which has them more rounded and feebler dentate. I have, however, had too little opportunity to study them from nature, to be able to give any definite opinion about it. . . . Rydberg has, however, not only established a new species *P. quinquefolia* for the plant here in question, but . . . ." If we compare this quotation with the other one from the same discussion given above we notice that Dr. Simmons contradicts himself. In the first quotation he states "there being not the slightest cause to look upon it as a species" and in the latter "rather might it be justifiable to distinguish all the arctic forms. . . ." These arctic forms with deeply incised leaflets, certainly look very different from *P. nivea* proper, but at the same time they are not the same as my *P. quinquefolia*. As I could not find any available name for them I proposed *P. nipharga* in the North American Flora. The plant is not exclusively arctic, for similar specimens, although usually smaller, have been collected in the Rockies, especially in Utah. Some of the specimens included in *P. nivea dissecta* by S. Watson belong here, others belong to *P. divisa* Rydb. The name *dissecta* is, however, not available. *Potentilla nivea subquinata* Lange is probably a form of this with some quinate leaves, but as the name *P. subquinata* has been applied to another species, it is not available for this. It includes probably *P. nivea arenosa* Lange, but it is not *P. nivea arenosa* Turcz. I think that it is *P. nivea pinnatifida* Lange (not that of Lehmann), but *pinnatifida* can not be used as a specific name for it. It is the same as *P. nivea altaica* Rydb., at least as far as the Utah specimens are concerned. I thought that it was the same as *P. altaica* Bunge, but have seen my mistake. I agree fully with the opinion of Dr. Simmons that "it [*P. altaica*] does not belong to *P. nivea*," not even if *P. quinquefolia*, *P. ni-*

pharga, and *P. uniflora* are included. Dr. Simmons states further: "In the Index Kewensis, it is referred to *P. multifida* L., where its right place seems rather to be." This statement was made after Dr. Simmons had seen the original specimens of Bunge. It is not unlikely at all that its relationship is with *P. pinnatifida*, but the plate illustrating it does not resemble so much *P. pinnatifida* as *P. Hookeriana*. The latter is also intermediate between the NIVEAE and the MULTIFIDAE groups, both in habit, the congested inflorescence, and the fusiform style. I can not agree with Dr. Wolf in regarding *P. altaica* as merely a form of *P. nivea pinnatifida* in the sense he uses the name. I refer the following specimens to *P. nipharga*:

MACKENZIE: Fort Good Hope, 1861–2, *I. S. Onion* (type).

ALBERTA: Rocky Mountains, *Drummond 368*.

UTAH: Sierra La Sal, 1899, *C. A. Purpus A, C, L,* and *H*.

GREENLAND: Vajat-shore, Disco, *Morten Pedersen 113;* Unartuarsuk, Disco, *Morten Pedersen;* Onjigsak, Disco, *Morten Pedersen 233*.

Potentilla Pedersenii Rydb. was based upon *P. subquinata Pedersenii* Rydb. In describing the latter I had only one collection in flower, viz., *Morten Pedersen 470*, and the description was drawn wholly from that. Laying too much stress upon the peculiar rootstock of this species and almost overlooking more essential characters, I referred carelessly to it several sterile specimens with a similar rootstock. These do not belong to it and Dr. Wolf is fully correct in his criticism of me for basing the variety on a mixture and for including in it specimens which he refers to *P. nivea* and var. *subquinata*. The type specimen he regards as a small-flowered *P. Wahliana*. With this I can not agree. It is true that it has something of the habit of *P. Wahliana*, the long hairs, although not yellowish, of that species, and the pubescent upper surface of the leaves; but it does not have the large, broad, and overlapping petals of *P. Wahliana*, or the oval or elliptic obtusish bractlets characteristic of that species and *P. villosa*. It has the flowers of *Potentilla nivea*. It could be a hybrid of *P. nivea* and *P. Wahliana*.

Dr. Wolf regards both *P. uniflora* and *P. Hookeriana* as varieties of *P. nivea*. *P. Hookeriana*, at least, is very distinct, and were it not for the 3-foliolate leaves, I would associate it with the MULTIFIDAE group, especially with *P. pseudosericea* and *P. paucijuga*. The style is just as fusiform as in those species and the inflorescence is compact as in that group, not open as in the typical species of the NIVEAE.

Dr. Wolf also regards *P. prostrata* as a variety of *P. nivea*, in this respect following Dr. Lehmann, but neither Lehmann nor Wolf seems to have seen the type of *P. prostrata* Rottboell. Dr. Wolf refers to it a specimen collected by Morten Pedersen, labeled as *P. quinquefolia* Rydb., but according to Wolf, better referable to *P. nivea macrophylla*. It is probably *Pedersen 496* that is referred to, but this has nothing to do with *P. prostrata* Rottb. The type of the latter is in the herbarium of the Botanical Garden at Copenhagen, where I saw it in 1901 and drew from it the description which is found in the North American Flora. I have seen no other specimen resembling it, and no form of *P. nivea* or of any of the species often included in it approaches it. The leaflets resemble those of *P. gracilis* but are three in number, and the flower and inflorescence are different.

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